

## REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1-20 are now present in this application. Claims 1, 12 and 14 are independent.

Claims 18-20 have been added, and claims 1, 2, 4, 6, 8, 9, 10, 12, 13 and 14 have been amended. Reconsideration of this application, as amended, is respectfully requested.

### *Objection to the Drawings*

The Examiner has objected to the drawings because Fig. 1 and Figs. 2A-2D should be designated by a legend such as --Prior Art--.

In order to overcome this objection, Applicants are concurrently submitting Proposed Drawing Corrections for the Examiner's approval, which address each of the deficiencies pointed out by the Examiner. Accordingly, reconsideration and withdrawal of this objection are respectfully requested.

### *Claim Objections*

The Examiner has objected to claim 9 because claim 10 is a substantial duplicate thereof. In order to overcome this objection, Applicants have amended claim 9 in order to correct the deficiency pointed out by the Examiner. Reconsideration and withdrawal of this objection are respectfully requested.

### *Rejections under 35 U.S.C. § 103*

#### Claims 1-11 and 14-17

Claims 1-3, 7, 11 and 14-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Applicants' disclosed prior art (APA) in view of Dennedy, and claims 4-6 and 8-10 stand rejected over the APA in view of Dennedy and further in view of Kapadia. These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that independent claims 1 and 14 have been amended to recite combinations of elements in a valve plate structure, including *said plurality of continuous grooves being located beyond a perimeter of said suction plate or said discharge plate*. Applicants respectfully submit that these combinations of elements as set forth in independent claims 1 and 14 are not disclosed or made obvious by the prior art of record, including Dennedy.

The Examiner admits that the APA (Fig. 1 and Figs. 2A -2D) does not teach a plurality of continuous grooves provided to surround the outside of the suction port or the discharge port, and asserts that Dennedy can supply the deficiency of the APA. The Applicants respectfully disagree.

Applicants respectfully submit that Dennedy discloses an outer casing of a compressor 1 which is formed with a crank case 2. Cylinder sleeves 3 are located in the casing and held in place by top plate 4. Top plate 4 of Dennedy has a rough pattern on a top surface thereof which could represent a spiked surface, or a grated surface. From the perspective shown, the rough pattern could also represent discontinuous ridges.

Referring to Figs. 1-3 of Dennedy, it is apparent that these figures do not show the rough pattern as being continuous grooves. In fact, it cannot be said with an adequate measure of confidence that the rough pattern represents grooves at all. The written description does not help the Examiner's position because it provides no hints or suggestions relative to the topography the surface of top plate 4.

The Applicants further submit that even if the rough surface of top plate 4 of Dennedy contained continuous grooves, combining the feature of continuous grooves with features of the APA would still not produce the Applicants' claimed invention.

The open/shut means of the Applicants' claimed invention operates opening and closing functions via pressure difference. As such, the problem of sticking between a valve and seat that exists in some conventional open/shut means arrangements does not exist here. In a conventional arrangement, a grooved seat surface would be formed at a location beneath the suction plate or discharge plate in order to reduce a stiction force. However, in the Applicants' invention, a position of the suction plate corresponds to a position of the

suction port of the valve plate, and a position of the discharge plate corresponds to a position of the discharge port of the valve plate. With this arrangement, a conventional seating surface does not exist. Further, since the valve plate and ports correspond with each other, there is no portion available to form grooves except for the surface located beyond a perimeter of either the valve plate or the suction plate. The figures of the Applicants' disclosure illustrate this clearly. In each embodiment shown, the grooves are located beyond a perimeter of either the suction plate or the discharge plate. As such, while a problem of stiction is not present, the claimed combination *reduces vibration and noise* generated from the collision of the suction plate with the valve plate. Hence, the references provide no suggestion or motivation to combine the applied references to reduce a stiction force.

For the Examiner's convenience, the Applicants' have provided a scaled-up version of Fig. 2d. The Examiner is thus urged to make an overlay comparison of the valve plate of scaled-up Fig. 2d with the grooves of the Applicants' claimed invention. By so doing, the Examiner may obtain a visual confirmation that the respective plates correspond to the respective ports and that the grooves are located beyond a perimeter of the respective plates.

Therefore, Dennedy, like the APA art, fails to teach or suggest a combination of elements in a valve plate structure, including *said plurality of continuous grooves being located beyond a perimeter of said suction plate or said discharge plate*, as recited in independent claims 1 and 14 (as amended). While Kapadia teaches away from the formation continuous grooves (see Kapadia,

Col.1, lines 31-45), Kapadia also cannot supply the deficiency of APA and Dennedy.

With regard to dependent claims 2-11 and 15-17, Applicants submit that claims 2-11 and 15-17 depend, either directly or indirectly, from independent claims 1 and 14, which are allowable for the reasons set forth above, and therefore claims 2-11 and 15-17 are allowable based on their dependence from claims 1 and 14. Reconsideration and withdrawal of this art grounds of rejection is respectfully requested.

Claims 12 and 13

Claim 12 stands rejected under 35 U.S.C. 103(a) of the Applicants' disclosed prior art (APA) in view of Erickson, and claim 13 stands rejected over the Applicants' disclosed prior art in view of Erickson and further in view of Kapadia. These rejections are respectfully traversed.

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that independent claim 12 has been amended to recite a combination of elements in a valve plate structure, including the groove being located beyond a perimeter of said suction plate or said discharge plate. Applicants respectfully submit that this combination of elements as set forth in independent claim 12 is not disclosed or made obvious by the prior art of record, including Erickson and Kapadia.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a spiral groove to surround the outside of the suction port for the purpose of providing a reduction in stiction force between ring valve 56 and its seat. The Applicants' respectfully disagree.

Particularly, the spiral groove of Erickson is part of a seating surface for ring valve 56. Being so configured, the spiral groove is not located beyond a perimeter of the ring valve 56. Hence, a combination of APA and Erickson would not produce the Applicants' claimed invention.

Therefore Erickson, like the APA, fails to teach or suggest a combination of elements in valve plate structure, including the groove being located beyond a perimeter of said suction plate or said discharge plate, as recited in independent claim 12, as amended. Kapadia cannot supply this deficiency. Reconsideration and withdrawal of this art grounds of rejection is respectfully requested.

Claim 13 depends from independent claim 12, which is allowable for the reasons set forth above, and therefore claims 13 is allowable based on its dependence from claim 12. Reconsideration and allowance thereof are respectfully requested.

### *Claims 18-20*

Claims 18-20 have been added for the Examiner's consideration. Applicants submit that claims 18-20 depend, either directly or indirectly, from

independent claims 1, 12 and 14, and are therefore allowable based on their dependence from claim 1, 12 and 14, which are believed to be allowable.

In addition, claims 18-20 recite further limitations which are not disclosed or made obvious by the applied prior art references. Consideration and allowance of claims 18-20 are respectfully requested.

### *Conclusion*

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Percy L. Square, Registration No. 51,084, at (703) 205-8034, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

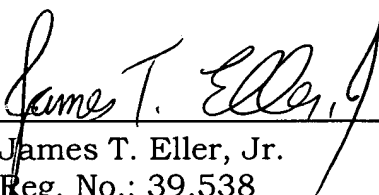
Applicants respectfully petition under the provisions of 37 C.F.R. § 1.136(a) and § 1.17 for a three-month(s) extension of time in which to respond to the Examiner's Office Action. The Extension of Time Fee in the amount of **\$950.00** is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By:

  
James T. Eller, Jr.  
Reg. No.: 39,538

JTE:PLS:jls:ndb

P.O. Box 747  
Falls Church, Virginia 22040-0747  
Telephone: (703)205-8000

Attachments: Two sheets of replacement drawings  
**Exhibit A**